

REMARKS

The remarks made in the last filed Response are reproduced here to facilitate the examination of the amended claims:

In the last Office Action, claims 1 and 2 were rejected under 35 USC 103(a) as being unpatentable over Hitchcock et al. ("Hitchcock") in view of Mitsuhashi et al. ("Mitsuhashi"). Claim 3 was deemed allowable over the prior art.

Applicants and applicants' council thank the Examiner for pointing out the allowable claim.

By this Response, claims 1 and 2 have been cancelled without prejudice or admission. New claims 4-7 have been added.

The present invention pertains to hardface alloys used, for example, on the shrouds of airfoil parts of gas turbine engines. As shown in Figure 2, two adjacent blades 10 of an assembled disc of a gas turbine engine are held in a housing member (not shown) such that surfaces 16 of each shroud section 12 contacts corresponding surfaces 16 of adjacent shrouds. These contact surfaces 16 are subjected to wearing forces during the operation of the gas turbine engine. As an assembled disc of blades rotates, the individual adjacent blades 10 may chatter against each other, causing wear to occur at the contact surfaces 16 of the shroud sections 12. This chattering results in constant hammering at the contact surfaces 16 of the interlocking blades 10. Excessive wear in

the area of the contact surfaces 16 can have detrimental consequences on the operation of the gas turbine engine, and thus is an area of concern.

To combat the excessive wear in the area of the contact surfaces of the shrouds, it has been conventional practice to apply a hard facing material to the shroud in the location of the contact surfaces. Figure 1 shows a typical location for the application of a hard facing material 18. The hard facing material is applied to the shroud by, for example, manual tig welding or laser welding.


Applicants have discovered an alloy that can be useful for increasing the service life of a shroud for an airfoil part of a gas turbine engine. The alloy comprises a hardface material composition having improved oxidation and wear resistance at elevated temperature. In accordance with the present invention, the hardface material composition is comprised of an alloy having a relatively small lanthanum addition and a relatively large carbon content. Applicants have discovered that this relatively small lanthanum addition and relatively large carbon content results in a hardface material that when applied to the contact area of the shroud can improve the service life of the airfoil part. By improving the service life of the airfoil part, the costs of running and maintaining a gas turbine engine are decreased and the engine efficiency is improved. The prior art does not disclose or suggest forming a shroud for an airfoil part of a gas turbine engine as set forth in the newly presented claims. Accordingly, applicants respectfully submit that the present claims remaining in the application are allowable.

In view of the foregoing, favorable consideration and allowance of the claims of the application are most respectfully requested. The Examiner is invited to contact the undersigned by telephone if there are any questions or suggestions regarding the present application.

Respectfully submitted,

March 21, 2004

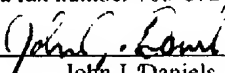
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CERTIFICATE of TRANSMISSION

Date of Deposit: March 21, 2004

I hereby certify that this correspondence is being facsimile transmitted to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 via fax number 703-872-9306.


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Additional Fees:

No additional fees are believed to be required. However, should it be determined that any additional fees are due, please contact the undersigned attorney for immediate remittance of any such fees.